THE CLAIMS

What is claimed is:

1. A method comprising:

computing a first swizzle stage to cancel, at least in part, a first capacitive noise with a first inductive noise by reordering an initial line order within a plurality of N concurrently active signal lines;

if further capacitive and inductive noise cancellation is available, computing a second swizzle stage to cancel, at least in part, a second capacitive noise with a second inductive noise by reordering the first swizzle stage line order within said plurality of N concurrently active signal lines.

2. The method of Claim 1 wherein a first signal line is adjacent to a first subset of signal lines in the first swizzle stage of the plurality of N concurrently active signal lines and the second swizzle stage is computed to place the first signal line adjacent to a second subset of signal lines in the second swizzle stage of the plurality of N concurrently active signal lines, the first subset and the second subset being disjoint.

3. The method of Claim 2 wherein the first signal line of the set is adjacent to a third subset of the set of signal lines in the initial order of the plurality of N

concurrently active signal lines, the first subset and the third subset being disjoint.

4. The method of Claim 3 wherein the first subset, the second subset and the third subset are disjoint.

5. The method of Claim 4 further comprising:

calculating a third swizzle stage to restore the initial order within said plurality of N concurrently active signal lines.

6. The method of Claim 1 wherein the second swizzle stage is computed by composing the first swizzle stage with itself.

7. An article of manufacture comprising

a machine-accessible medium including data that, when accessed by a machine, cause the machine to perform the method of Claim 6.

8. The method of Claim 1 comprising computing S swizzle stages to increase the capacitive and inductive noise cancellation within said plurality of N concurrently active signal lines, wherein each of the N concurrently active signal lines is placed adjacent to every other signal line within said plurality of N concurrently active signal lines in at least one of the S stages.

9. The method of Claim 8, S being related to N according to the equation:

$$N^2/2 - (2S+3)N/2 + S + 1 = 0.$$

10. The method of Claim 8 wherein a plurality of said S swizzle stages are computed by compositions of the first swizzle stage..

11. An article of manufacture comprising

a machine-accessible medium including data that, when accessed by a machine, cause the machine to perform the method of Claim 8.

12. An article of manufacture comprising

a machine-accessible medium including data that, when accessed by a machine, cause the machine to perform the method of Claim 3.

13. An article of manufacture comprising

a machine-accessible medium including data that, when accessed by a machine, cause the machine to perform the method of Claim 2.

14. The method of Claim 1 wherein the first swizzle stage and the second swizzle stage are each computed to cancel a stage cancellation limit amount of capacitive

noise and inductive noise within the plurality of N concurrently active signal lines.

15. The method of Claim 1 wherein second swizzle stage is computed to place no signal line, of the set of N signal lines, adjacent to one of the same signal lines that they are adjacent to in the first swizzle stage.

16. The method of Claim 15 wherein the first swizzle stage is calculated to place no signal line adjacent to one of the same signal lines that they are adjacent to in the initial ordering of the plurality of N concurrently active signal lines.

17. The method of Claim 16 wherein the second swizzle stage is calculated to place no signal line adjacent to one of the same signal lines that they are adjacent to in the initial ordering of the plurality of N concurrently active signal lines.

18. An article of manufacture comprising:

a machine-accessible medium including data that, when accessed by a machine, cause the machine to:

compute a swizzling pattern to cancel a target amount of capacitive noise and inductive noise within a plurality of N concurrently active signal lines, each having an initial signal track; and

generate one or more swizzle circuits to reassign each of the initial signal tracks among the plurality of N concurrently active signal lines according the swizzling pattern computed.

19. The article of manufacture of Claim 18 wherein concurrently active indicates that each of the N signal lines may be switched in a single transmission cycle.

20. The article of manufacture of Claim 18 wherein a first signal line is initially in a first signal track adjacent to a first subset of the plurality of N concurrently active signal lines and the swizzling pattern is computed to place the first signal line in a second signal track adjacent to a second subset of the plurality of N concurrently active signal lines, the first subset and the second subset being disjoint.

21. The article of manufacture of Claim 18 wherein computing the swizzling pattern comprises transposing lines of the plurality of N concurrently active signal lines until the target amount of capacitive noise and inductive noise cancellation within the plurality of N concurrently active signal lines is reached.

22. The article of manufacture of Claim 21 wherein computing the swizzling pattern comprises transposing capacitive and inductive victim lines of the plurality of N concurrently active signal lines.

23. The article of manufacture of Claim 22 wherein the capacitive noise and inductive noise cancellation is due to switching within the plurality of N concurrently active signal lines.

24. The article of manufacture of Claim 18 wherein computing the swizzling pattern comprises a search of possible signal line orders within the plurality of N concurrently active signal lines.

25. The article of manufacture of Claim 24 wherein the swizzling pattern places no signal line, of the set of N concurrently active signal lines, adjacent to one of the same signal lines that they are adjacent to in their corresponding initial signal tracks.

26. The article of manufacture of Claim 18 further including data that when accessed by the machine, cause the machine to:

generate one or more swizzle circuits to restore the set of signal lines to their corresponding initial signal tracks.

27. The article of manufacture of Claim 18 further including data that when accessed by the machine, cause the machine to:

compute a second swizzling pattern to cancel the target amount of

capacitive noise and inductive noise within the plurality of N concurrently active signal lines; and

generate a repetition of the one or more swizzle circuits to reassign each of the corresponding signal tracks among the plurality of N concurrently active signal lines according the second swizzling pattern.

28. The article of manufacture of Claim 27 further including data that when accessed by the machine, cause the machine to:

generate a plurality of S repetitions of the one or more swizzle circuits to reassign the corresponding signal tracks among the plurality of N concurrently active signal lines, S being related to N according to the equation $N^2/2 - (2S+3)N/2 + S + 1 = 0$; and

optionally generate one or more swizzle circuits to restore the set of signal lines to their corresponding initial signal tracks.

29. An apparatus produced at least in part by the article of manufacture of Claim 28, the apparatus comprising:

a bus including at least N signal lines; and

S repetitions of the one or more swizzle circuits generated at least in part by the article of manufacture of Claim 28.

30. An apparatus produced at least in part by the article of manufacture of Claim 18, the apparatus comprising:

a bus including at least N signal lines; and

said one or more swizzle circuits generated at least in part by the article of manufacture of Claim 18.